CSCAPE 2005: NOAA Ship *David Starr Jordan*
Weekly Science Report – Leg 2
11 August, 2005
Karin A. Forney – Cruise Leader

SCIENCE SUMMARY: 4 – 10 August 2005

This week we've seen billions and billions of animals! -- *Velella velella*, that is. Commonly known as By-the-Wind-Sailors, this is a floating jellyfish with a little sail, about 1-3 inches long. For about three days straight, as we cruised around in offshore waters of northern California, we encountered an amazing number of them – about one per square meter, nonstop. It looked like someone had sprinkled them all across the water surface, as far as you could see. Based on the observed densities, we calculated that there were about 2 billion individuals per day within the 10-mile viewing strip along our transect path. Getting perpendicular distances for all of them all was quite a challenge. But we decided to conduct a full-scale line-transect survey for this species, since there are no marine mammals out here. And after a while we got quite good at drawing the sighting forms for them, too….

Seriously, on the marine mammal front, we've had very few sightings, including only three sperm whale groups, some lone fin whales, and a few small dolphin groups. None of the whales have been cooperative for small boat operations, although we did try for biopsies on a sperm whale and a fin whale yesterday (no luck!). We managed to get a few photos though, and everyone in the small boat got soggy in the choppy seas. But overall, it's been a very quiet week, and we're glad we don't get paid by the sighting. The weather has been hovering right at the edge of workable - Beaufort 5 conditions most days. Today, we finally found some slightly calmer waters in the westernmost reaches of our study area, about 250-300 nautical miles offshore of northern California. We expect to cross into Oregon tomorrow, and hope to find more calm weather there.

Our other operations have been humming right along. Candy and Liz finally have worked out most of the oceanography start-up problems. Peter and Thomas continue their never-ending quest to find unusual seabirds. Our teacher-at-sea, Greta, has finally grown her sea legs and has been learning all about our strange and mysterious scientific ways. And the fine crew of the Jordan are providing excellent support for our operations and great companionship during our long, slow days out here. We are now hoping for a few days with lighter winds, and perhaps some marine mammals would be nice – check back next week to see if we succeed!

Sightings and Effort Summary for Marine Mammals

Date	Start/Stop	Position Time	Total Distance	Avg. Beaufort
080405	0639	N34:34.58 W124:55.36	123.8 nmi	4.0
	2016	N35:04.48 W127:22.45		
080505	0651	N35:06.39 W127:22.71	120.3 nmi	4.2
	2024	N36:39.27 W127:32.53		
080605	1444	N37:02.28 W128:46.20	33.3 nmi	5.2
	1829	N37:28.71 W128:51.50		
080705	0652	N38:45.98 W128:24.76	101.7 nmi	4.3
	2026	N37:00.23 W129:02.59		
080805	0900	N38:46.79 W128:25.40	71.4 nmi	5.0
	1934	N40:03.17 W127:59.58		
080905	0642	N40:02.38 W127:59.33	62.7 nmi	5.2
	1921	N40:40.48 W127:44.91		
081005	0642	N41:10.15 W127:59.67	85.3 nmi	3.7
	2035	N41:37.09 W130:00.55		

CODE	SPECIES	WEEKLY TOTAL#	CSCAPE TOTAL#
005	Unidentified common dolphin	-	1
017	Short-beaked common dolphin	3	12
018	Bottlenose dolphin	-	4
021	Risso's dolphin	-	50
022	Pacific white-sided dolphin	-	87
027	Northern right whale dolphin	-	25
037	Killer whale	-	8
040	Harbor porpoise	-	57
044	Dall's porpoise	-	127
046	Sperm whale	4	9
049	Unidentified beaked whale	-	1
051	Mesoplodon sp.	-	4
061	Cuvier's beaked whale	-	2
069	gray whale	-	2
070	Unidentified rorqual	2	5
071	Minke whale	-	7
074	Fin whale	3	24
075	Blue whale	-	30
076	humpback whale	-	358
077	unid. dolphin	1	35
078	unid. medium dolphin	1	1
078	unid. small whale	-	2
079	unid. large whale	-	38
096	unid. cetacean	-	2
	TOTAL	**14**	**891**

Note: Pinnipeds not included; mixed groups are counted once for each species.

Biopsies (Tim O'Toole, Gary Friedrichsen, Jason Larese)

Species	Weekly	CSCAPE Total
Humpback whale	-	18
Blue whale	-	6
Fin whale	-	1
Sperm whale	-	11
Short-beaked common dolphin	-	1
Pacific white-sided dolphin	-	16
Northern right whale dolphin	-	6
Dall's porpoise	-	3
Killer whale	-	5
GRAND TOTAL	☹	**67**

Photo-Project (Annie Douglas, Holly Fearnbach, Cornelia Oedekoven)

This week's results from the photo-ID efforts reflect the sparseness of the areas we have been in and the rather rough viewing conditions. We are ending the second week with two photographed schools of short-beaked common dolphins, two fin whale and two sperm whale IDs. The small boat was only launched once. The last sperm whale ID obtained was from a single large whale that we followed with J-3 for a while without any luck. In the end, the whale seemed a lot less evasive towards the ship and we were able to get his/her picture from the flying bridge. We are still amazed by how rapidly our new camera, the Canon 20D, fires off the shots: with one push on the trigger you can get nine perfectly ID-able pictures out of one fluke sequence. "Sweet, dude!" In addition to photographs of marine mammals, we are getting quite a nice collection of seabird pictures as well, thanks mainly to Peter Pyle. At the end of the week, the weather is starting to look better. We are ready and hoping for more marine mammals to photograph and plenty of small boat launches. "Watch out mammals, here we come!"

Species	Weekly	CSCAPE Total
Humpback whale IDs	-	82
Blue whale IDs	-	24
Fin whale IDs	2	11
Sperm whale IDs	2	17
Killer whale IDs	-	53
Short-beaked common dolphins*	2	5
Bottlenose dolphins*	-	1
Northern right whale dolphins*	-	6
Pacific white-sided dolphins*	-	12
Risso's dolphins*	-	8
Dall's porpoise*	-	2

*number of groups photographed

Bird Buzz (Peter Pyle, Thomas Staudt)

For birders on a pelagic trip off California there is a magic word that causes panicked scrambling and brings even the deathly seasick out on deck to look around: *Pterodroma*! This enigmatic genus of petrels consists of some 30+ species, depending on one's taxonomic leanings, of which about 22 breed in the South Pacific and only 2 breed in the North Pacific. They nest on remote and uninhabited islands, often come and go only at night, spend most of their lives far from land, and thus represent a great mystery to ornithologists. Even some of their specific scientific names, such as *inexpectada*, *neglecta*, and *ultima*, invite intrigue. *Pterodroma* is to seabird biologists what *Mesoplodon* is to cetacean biologists.

It has long been known that some of these southern *Pterodroma* travel to the North Pacific during their non-breeding season, but the exact ranges and status off North America are still being worked out. There were no records of any species in California waters (defined as within 200 nautical miles of the coast) until the 1970's. Thanks primarily to SWFSC and other seabird biologists aboard NOAA ships, we have now documented six species. But there are several more that have been recorded close but not in California waters, and the potential exists for almost all of the Pacific species to reach the area.

Off California, *Pterodroma* petrels are primarily encountered in the deeper pelagic zone, 80-200 miles from shore, where ornithologists and birders get to spend little time. To be able to spend days on end out here is a rare opportunity, and so far the abundance and variety of *Pterodroma* petrels has not disappointed us. Leading the list have been Cook's Petrels, of which we've recorded about 58 individuals so far. This species breeds in New Zealand and travels to the temperate and subtropical North Pacific to escape the austral winter. Next has been Murphy's Petrels, of which we've observed 10. Although not confirmed off California until 1989, it is now known to be a regular (if not common) migrant off shore, primarily in April-June. The howling northwesterly winds encountered during these months explains why Murphy's Petrel was the last regularly occurring North American bird to be documented. We are somewhat surprised to see so many in August -- each of our sightings is expanding the known seasonal range in North America.

The Dark-rumped Petrel has recently been split into two species, one that breeds in the Hawaiian Islands and the other in the Galapagos. Unfortunately they cannot be separated at sea (leading some to question specific status), but distributional patterns documented by Bob Pitman, Lisa Ballance and others suggest that individuals from Hawaii would be more likely in our region. We have encountered 6 Dark-rumped Petrels thus far, representing the highest number seen off California within a one-week period (although 4 of the 6 were between 200 and 300 miles from shore and thus "don't count"). Finally, we have also seen 3-4 petrels that resemble Cook's but appear smaller and darker above. We have not been able to observe these well enough to confirm their identification; they could be Stejneger's Petrels, a species that breeds off Chile and has been recorded in California only 4 times. But we think we may also have another species out here, called Pycroft's Petrel. This species was only recently split from Cook's Petrel, it's identification criteria are still evolving, and its at-sea distribution is virtually unknown. So far we have a few blurry digital images to work with and we will certainly be concentrating on getting more during the remainder of Leg 2.

Oceanographic Operations (Candice Hall, Liz Zele)

Second week and almost all is well. Although plagued with computer programme problems, all oceanographic operations are in full-swing. We've discovered the art of how to convince our equipment to co-operate and will be publishing our best-seller book titled 'How to sweet-talk your gear' next winter ($5 - great for the Xmas stocking!).

Physically, we've been zooting through relatively temperate waters of 17 to 18 degrees centigrade (62 - 64 F) and our mainly offshore position has resulted in very small bongo plankton samples. However, never to be deterred from finding that little copepod hiding behind the net stitching, we've been holding late evening microscope classes for all those interested in our catch. Chico even asked if he could fillet a portion of our last sample for the BBQ the next night. Luckily we managed to retain it for scientific purposes.

An interesting feature that we've noticed in this area are the miles of *Velella velella* that surrounded us for approximately 3 days of solid steaming. Our bongo samples may have been relatively small, but the abundance of *Velella velella* certainly indicated that there was enough plankton to support their numbers.

Our parting thought for the week: Through the peaks and troughs of life you can always find a happy mean.

Date	CTDs	Bongo tows	XBTs	Comments
08/04	1	1	5	
08/05	1	1	3	
08/06	1	1	4	
08/07	1	0	3	
08/08	0	1	3	
08/09	1	1	3	
08/10	1	1	3	*Velella velella* collected & frozen